

REMARKS

Claim 23 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 23 of copending Application No. 10/486,273 (equivalent US 2005/0011864). Applicant respectfully traverses this ground of rejection and urges that the presently claimed invention is patentably distinguishable over the copending Application cited by the Examiner.

Claim 23 of the present invention includes a new characteristic that an electrode member extends across the butt portion and has an outer surface with a convex portion which faces the plate member and gradually retreats therefrom. The Application No. 10/486,273, however, is characterized that the apparatus includes press portions formed in electrode members for pressing one of the two welding sheet members in the thickness direction and for swelling and deforming the end surface of the welding sheet member. As shown in Figure 2 of the present invention, the one of the electrodes of the present invention has a convex portion 1A, 1B that presses an upper corner portion of the end face 31A of the plate member downwardly, and the other of the electrodes has an outer surface with a flat portion. On the contrary, as shown in Figure 2 of the Application No. 10/486,273, each of the two electrodes of the Application No. 10/486,273 has an outer surface with a stepped portion 3C, 4C as well as the first thin portion 3A, 4A and the second thick portions 3B, 4B. The first thin portions 3A, 4A of the stepped electrodes press the thick sheet member 1, and the second thick portion 3B, 4B of the electrodes press the thin sheet member 2. Each portion of the stepped electrodes flatly presses the sheet when each portion comes into contact with the sheet. The convex portions 1A, 1B of the electrodes of the present invention, on the contrary, smoothly and gradually come into contact with the plate members. At first, the first convex portion 1A presses an upper corner portion of the end face 31A of the

thick plate member 31 downwardly, and thereafter the second convex portion 1B also starts gradually pressing the thin plate member 33. As such, it is respectfully submitted that the presently claimed invention is patentably distinguishable over the copending Application.

Claims 23-44 have been rejected under 35 U.S.C. §103(a) as being obvious over Toshinobu, JP Publication No. 60-006273 in view of Hideaki, JP Publication No. 08-039261. Applicant respectfully traverses these grounds of rejections and urges that the presently claimed invention is patentably distinguishable over the prior arts cited by the Examiner. Regarding Claim 23, the two press machines 3 of the Toshinobu invention are not electrode members which weld coil member (1, 1-2) and coil member (2, 2-2) by electric resistance heating. The Examiner states that the phrase, "press machine 3 is heated during a pressing operation," is described in last paragraph of page 5 of JP60-6273 (Toshinobu) translation. However, the corresponding Japanese original specification describes that in both embodiments of Fig. 2 and Fig. 3, the portion of coil members to be pressed may be heated to make it easy to press forming by press machine 3. Accordingly, in both embodiments of Fig. 2 and Fig. 3 of JP60-6273 (Toshinobu), heat means to heat the press portion of coil members exist aside from the press machine 3. In addition, in an embodiment of Fig. 2 of JP60-6273 (Toshinobu), a weld bead of welding portion 4 is formed by welding means which is prepared aside from the press machine 3. Further, as shown in Figure of the Toshinobu invention, the electrodes have outer surfaces with a flat portion rather than a convex portion, while one of the electrodes of the present invention has a convex portion.

Regarding the Hideaki invention, JP08-039261, electrode members 33, 34 of the Hideaki invention do not contact with plates 11, 12 in press force which deform these plates 11, 12 to significant degree. In addition, the Hideaki invention does not have such a feature that an electrode roller extends

across the butt portion and has an outer surface with a convex portion which faces the plate member and gradually retreats therefrom. While the Hideaki invention seems to have electrodes 33, 34 that have a convex portion, the electrodes 33, 34 are apart from the rolls 51, 52. The present invention is characterized that the electrode rollers are not divided into electrodes and rollers, and the rollers themselves are the electrodes. Thus, the rollers of the present invention have a convex portion, while the rolls of the Hideaki invention do not have a convex portion. Moreover, the plates of the Hideaki invention are cut into two parts, and the thus the joined ends of both plates have the same thickness while the present invention has a thin plate member and a thick plate member.

Additionally, both of the Toshinobu invention and the Hideaki invention do not disclose "means for causing relative movement of the electrode members toward each other and contacting of a surface of the plate member." As such, it is respectfully submitted that Claim 23 and dependent Claims 24-42 are patentably distinguishable over the prior arts.

As for Claim 43, the Toshinobu invention, JP60-6273, discloses the steps of 1) pressing the rear end of the preceding coil and the front end of the succeeding coil to have a uniform sheet gauge, then 2) butt-welding the two ends. The Hekeaki invention, JP08-039261, describes the band steel relay welding process that has the steps of 1) the welding side formation process and then 2) the seam welding process. None of the prior arts disclose the method of present invention, comprising the steps of 1) supporting the plate member, 2) providing a butt welding apparatus, 3) positioning electrode members such that they extend across the butt portion and the intermediate portion is offset from a joint portion, and 4) pressing a surface of the plate member while performing electric resistance heating. Thus, the Toshinobu invention does not have a positioning step, and the Hekeaki invention does not contain a positioning step and a pressing

step. As such, it is respectfully submitted that Claim 43 and dependent Claim 44 are patentably distinguishable over the prior arts.

For the above reasons allowance of Claims is respectfully requested. Further and favorable reconsideration is respectfully requested.

Respectfully submitted,


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